Design & Technology

Key Stage One National Curriculum Aims:

Design:

- Design purposeful, functional, appealing products for themselves and other users based on design criteria
- Generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology

Make:

- Select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]
- Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics

Evaluate:

- Explore and evaluate a range of existing products
- Evaluate their ideas and products against design criteria

Technical knowledge:

- Build structures, exploring how they can be made stronger, stiffer and more stable
- Explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products

Key Stage Two National Curriculum Aims:

Design:

- Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups
- Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design

Make:

- Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately
- Select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities

Evaluate:

- Investigate and analyse a range of existing products
- Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work
- Understand how key events and individuals in design and technology have helped shape the world

Technical knowledge:

- Apply their understanding of how to strengthen, stiffen and reinforce more complex structures
- Understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]
- Understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]

Apply their understanding of computing to program, monitor and control their products.

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Nursery	- Collage/junk modelling, sculpture					
	- Explore different materials with support - Understand how to use glue to stick materials onto paper	- Begin to join different materials such as hammers and nails with support - Explore different materials with support - To show greater control when using a glue stick and glue spreader to stick materials to paper	- Explore a range of materials with independence - Continue to develop their knowledge of how to join different materials, hammers and nails, tape and glue	- Continue to develop their knowledge of how to join different materials, hammers and nails, tape and glue - Explore a range of materials with independence	- Develop own ideas about which materials to use and what to make - Develop own ideas and choose own materials and joining methods	- Develop own ideas about which materials to use and what to make - Develop own ideas and choose own materials and joining methods
Reception	- Creating with Materials - Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. - Share their creations, explaining the process they have used.					
	- To explore different types of glue and tape for a range of purposes - Use simple blocks and construction sets for a purpose - Make own playdough, with support.	- Join materials together to make musical instruments. - Explore a variety of construction materials and make a plan for what they want to make. - Uses simple tools and techniques competently and appropriately. - To learn the names of different tools and techniques that can be used to create projects. - To experiment with creating different things and to be able to talk about their uses. - Make play dough independently.	- Return to and build on their previous learning, refining ideas and developing their ability to represent them. - Constructs with a purpose in mind, using a variety of resources. - To be able to safely construct with a purpose and evaluate their designs, including using simple woodworking tools.	- Use tools and techniques with increased care and precision. - To plan, carry out and evaluate and change where necessary. - Manipulates materials to achieve a planned effect. - To identify and select resources and tools to achieve a particular outcome.	- Create collaboratively and share ideas, resources and skills. - Adapt own work to make it even better. - Problem solve and reflect on their designs and creations. - Independently use tools and techniques with increased care and precision. - To know the different uses and purposes of a range of media and materials. - To be able to safely construct with a purpose and evaluate their designs	- Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function - Share their creations, explaining the process they have used

	Autumn Term	Spring Term	Summer Term
Y1 / 2 Year B	**Textiles: Puppets** Can I join fabrics together using different methods? Can I create a design using a template? Can I join two fabrics together accurately? Can I edit and embellish my design? Key Vocabulary: decorate, design, fabric, glue, model, hand puppet, safety pin, staple, stencil, template	**Structures: Constructing a Windmill** Can I include individual preferences and requirements in a design of a windmill? Can I make a stable structure? Can I assemble the components of my structure? Can I edit and evaluate my design? Key Vocabulary: axle, bridge, design, design criteria, model, net, packaging, structure, template, unstable, stable, strong, weak	**Cooking and Nutrition: Fruit and Vegetables** What is the difference between fruit and vegetables? Can I identify where plants grow and what we can eat? Can I compare the flavours of fruit and vegetables? Can I make a fruit and vegetable smoothie? Key Vocabulary: fruit, seed, root, smoothie, carton, flavour, vegetable, leaf, stem, healthy, design, peel, slice
Y1 / **2** Year A	**Mechanisms: Fairground Wheel** Can I design a Ferris wheel involving wheel mechanisms? What materials are appropriate for my design? Can I build and test a moving wheel mechanism? Can I make and evaluate a structure with a rotating wheel? Key Vocabulary: design, wheel, pods, axle holder, design criteria, Ferris wheel, axle, frame, mechanism	**Textiles: Pouches** What is a running stitch, and can I sew one? Can I create a template for my design? Can I join fabrics using a running stitch? Can I add decoration to my pouch? Key Vocabulary: decorate, fabric glue, needle, running stitch, template, fabric, knot, needle threader, sew, thread	**Mechanisms: Making a moving monster** How do objects move? Can I connect objects appropriately? Can I create different designs for my monster? Can I make a moving monster? Key Vocabulary: axle, input, mechanical, pivot, design criteria, linkage, output, wheel

Y3/4 A 2022/2023	Cooking and nutrition: Eating Seasonally (updated for 2024/25) Can I explain why food comes from different places around the world? Can I explain the benefits of seasonal foods? Can I develop cutting and peeling skills? Can I evaluate seasonal ingredients? Can I design a mock-up using criteria? Can I evaluate a dish? Key Vocabulary: appearance, arid, climate, complementary, country, cut, design, evaluate, export, fruit	**Electrical Systems: Electric Poster** What is the purpose of information design? Can I research a set topic to develop a range of initial ideas? Can I develop an initial idea into a final design? Can I assemble my final product and incorporate a simple circuit? Key Vocabulary: information design, design, public, design criteria, research, initial ideas, sketch, bulb, self-assessment, peer assessment.	**Structures: Constructing a Castle** Can I recognise how multiple shapes (2D and 3D)are combined to form a strong and stable structure? Can I design a castle? Can I construct 3D nets? Can I construct and evaluate my final product? Key Vocabulary: 2D, 3D, castle, design, key features, net, scoring, shape, stable, stiff, strong, structure, tab.
Y3/4 B 2023/24	**Cooking and Nutrition: Adapting a Recipe** Can I follow a recipe accurately? Can I test and evaluate a prototype? Can I design a biscuit using a budget? Can I make a biscuit to fulfil a brief? Key Vocabulary: design criteria, research, texture, innovative, aesthetic, measure, cross-contamination, diet, processed, packaging	**Mechanisms: Slingshot Car** What is a chassis, and can I build one? Can I design a shape which reduces air resistance? Can I make a model based on a design? Can I assemble and test a product? Key Vocabulary: chassis, energy, kinetic, mechanism, air resistance, design, structure, graphics, research, model, template	**Textiles: Fastenings** What are the advantages and disadvantages of each fastening type? Can I design a product to meet a specified criteria? Can I make and test a paper template? Can I assemble a finished product? Key Vocabulary: aesthetic, assemble, book sleeve, design criteria, evaluation, fabric, fastening, mock-up, net, running stitch, stencil, target audience, target customer, template
Y5	**Textiles: Stuffed Toys** Can I design a stuffed toy? What is a blanket stitch, and can I sew one? Can I add decoration to my stuffed toy?	**Cooking and Nutrition: Developing a Recipe** How are ingredients reared and processed? Can I adapt a recipe? Can I evaluate nutritional content?	**Digital World: Monitoring Devices** Can I develop a design criteria to meet a particular animal's needs? Can I write a program to monitor temperatures?

	Can I assemble my stuffed toy accurately? Key Vocabulary: accurate, annotate, appendage, blanket stitch, design criteria, detail, evaluation, fabric, sew, shape, stuffed toy, stuffing, template	Can I practice food preparation skills? Can I design a product label? Can I follow and make an adapted recipe? Key Vocabulary: Abattoir, adaptation, balanced, beef, brand, cook, cross-contamination, cut, design, enhance, equipment, evaluate, farm, grate, hygiene, ingredients, label, measure, nutrient, nutrition, nutritional value, preference, press, process, recipe, safety, theme	What materials would be most appropriate for a micro:bit case, stand or housing? Can I use 3D CAD software to create a virtual model? Key Vocabulary: alert, ambient, Boolean, consumables, decompose, development, device, duplicate, durable, electronic, inventor, lightweight, man-made, manipulative, manoeuvre, microplastics, model, monitor, monitoring device, moulded, plastic, plastic pollution, programming comment, programming loop, reformed, replica, research, sensor, strong, sustainability, synthetic, thermometer, thermoscope, value, variable, versatile, water resistant, workplane
Y6	**<u>Electrical systems: Steady Hand Game</u>** Can I research and analyse a range of toys? ***What can I learn about children's toys?*** Can I design a steady hand game? ***Can I include all the features for a successful design?*** Can I construct a stable base for my game? Can I use electronics to assemble and complete my game? ***What went well and what could I improve next time?*** Key Vocabulary: assemble, battery, battery pack, benefit, bulb, bulb holder, buzzer, circuit, circuit symbol, component, conductor, copper, design, design criteria, evaluation, fine motor skills, fit for purpose, form, function, gross motor skills, insulator, LED, user	**<u>Mechanisms: Automata Toys</u>** Can I suitably prepare wood for assembly? Can I assemble the frame components and supports using an exploded-diagram? Can I use knowledge of different cam profiles to inform a design decision? Can I apply the housing and finishing touches to the automata frame? Key Vocabulary: accurate, assembly-diagram, automata, axle, bench hook, cam, clamp, component, cutting list, diagram, dowel, drill bits, exploded-diagram, finish, follower, frame, function, hand drill, jelutong, linkage, mark out, measure, mechanism, model, research, right-angle, set square, tenon saw	**<u>Digital world: Navigating the world</u>** Can I write a design brief based on a client request? Can I write a program that includes multiple functions for a navigation device? What materials are most appropriate for a sustainable product concept? Can I use 3D CAD software to produce a virtual model? Can I present a pitch to 'sell' a product to a specified client? Key Vocabulary: investment, lightweight, loop, manufacture, materials, wood, metal, plastic, bamboo, mouldable, navigation, non-recyclable, product lifecycle, product lifespan, program, recyclable, smart, sustainable, sustainable design, unsustainable design, variable, workplane, 3D CAD, application, biodegradable, Boolean, cardinal compass, client, compass, concept, convince, corrode, duplicate, environmentally friendly, equipment,

			feature, finite, function, functional, GPS tracker, if statement, infinite